

Claims.

1. A method for the production of nanomaterial particles (as herein defined) in which:
said nanomaterial particles are synthesized in the solutions of complex liquids from suitable precursors, which precursors are selected from suitable surfactants, metal salts, and alkoxides, by a suitable chemical reaction under mild conditions;
and preparing from said materials fine colloids dispersed in various polymer solutions.
2. A method according to Claim 1 wherein the water in the solution is non freezing water.
3. A method according to Claim 1 or 2, wherein the nanomaterial particles have a diameter of 1-5 nm.
4. A method according to any of Claims 1 to 3, wherein the mild conditions are atmospheric pressure and a temperature range of room temperature to 70°C.
5. A method according to any of Claims 1 to 4, wherein the chemical reaction is selected among a hydrolysis, reduction and exchange process.
6. A method according to any of Claims 1 to 5, wherein the solutions are selected among organized water-organic-surfactants (microemulsions and liquid crystalline media).
7. A method according to any of Claims 1 to 6, wherein the solvent is selected among suitable hydrocarbons (octane, decane, dodecane); chlorinated hydrocarbons (1,2 - dichloro-ethane); and ethers (ethylether).
8. A method according to any of Claims 1 to 7, wherein the surfactants are selected among trioctylmethyl ammonium chloride (aliquat 336), dioctyldimethylammonium bromide (DDAB), cetyltrimethylammonium chloride (CTAB); sodium bis-(2-ethyl-hexyl)-sulfosuccinate; and poly-ethoxyethylene-10-oleyl ether.
9. A method according to any of Claims 1 to 6, wherein metal oxides and precursors are selected among tetraethoxy silanes (TEOS); tetramethoxy silane (TMOS); Al, Zr iso-propoxides, Fe, Mg and Al chlorides; Al and Mg acetates; Na and K

- orthosilicates; Zr oxychloride and transition metal salts of Fe, Co, Ni, Cu, Ru, Rh, Pd, Ir and Pt.
10. A method according to any of Claims 1 to 9, wherein the polymers are selected among polyethylene oxide (PEO); polyvinyl chloride (PVC); polyvinyl alcohol (PVA); and polymethyl methacrylate (PMMA).
 11. A method according to any of Claims 5 to 10, wherein the reducing agent is selected among sodium formate; hydrogen; and certain alcohols (methanol, ethanol, isopropylalcohol).

ADD
A1

00522209.001100